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Serial No. 10/803,620

Supplemental Response to Office Action of May, 13 2005

**REMARKS**

Claims 1-30 and 35 are in the case. Claims 32-34 are cancelled. Claim 31 was withdrawn from consideration as a result of an earlier restriction requirement and is now cancelled.

*It is requested that the amendments and arguments set forth in Applicant's Response filed August 15, 2005 be reviewed and fully considered.* This Response is intended to supplement the August 15, 2005 Response in order to further clarify Applicant's structural invention as suggested during an in-person interview with Examiner Palabrica on October 12, 2005. This Response is not intended to replace or withdraw the arguments set forth in the August 15, 2005 Response. Accordingly, only those arguments affected by the current amendments to claim 1 will be discussed.

The courtesies extended by Examiner Ricardo Palabrica in granting a personal interview with Applicant, Dr. Krishns Singh and attorney for Applicant, Brian L. Belles, are noted with appreciation. During the interview, the rejections set forth in the May 13, 2005 Office Action were discussed. The interview was helpful in learning how Examiner Palabrica interprets the claim language "overpack." It was agreed that Applicant would amend claim 1 to recite that "the cavity has a cross-section that accommodates no more than one spent fuel canister" in order to more clearly define the intended overpack-style of the invention in terms of recited structure in the claim. It was also agreed that Applicant would amend claim 1 to recite that "the below grade outlet is in spatial cooperation with the cavity" for structural clarity. Accordingly, this Response is being filed. Agreement was not reached on the allowance of the claims as Examiner Palabrica wanted to perform a further search.

***Claim Rejections Under 35 U.S.C. § 102(b)***

In paragraph 2 of the Office Action, claims 1, 3, 7, 8, 18, 19, 24, 25, 29, and 30 were rejected under 35 U.S.C. § 102(b) as being anticipated by one of U.S. Patent 5,753,925 ("Yamanaka"), U.S. Patent 4,971,752 ("Parker"), or U.S. Patent 3,111,078 ("Breckenridge").

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In paragraph 3 of the Office Action, claims 1, 3, 5, and 30 were rejected under 35 U.S.C. § 102(b) as being anticipated by RU 216802C ("Makhmutov").

In paragraph 4 of the Office Action, claims 1-3, 9-12, 18, 19, 21, 24, 26, 29 and 30 were rejected under 35 U.S.C. § 102(b) as being anticipated by one of U.S. Patent 3,111,586 ("Rogers") or U.S. Patent 4,663,533 ("Kok").

In paragraph 6 of the Office Action, claims 1-5, 13, 18, and 21-23, were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 4,834,916 ("Chaudon").

The anticipation rejection of claim 1 based on each of these references will be discussed in turn below.

**Rejection of Claim 1 Based on Yamanka**

The Office Action cites Yamanka as disclosing a radioactive waste storage facility having a body 38 having a cavity and an inlet ventilation duct (consisting of intake port 11 and duct 19) extending from an above grade outlet 11 to a below grade inlet 30A or 30B.

By way of background, Yamanka discloses a warehouse-style storage facility that is designed to accommodate a plurality of canisters 6 in an internal room. The Yamanka facility utilizes the warehouse body/walls 38 to contain radiation emitted from the storage tubes 6. See Yamanka, FIG. 1. The storage tubes/canisters 6 are maintained in a vertical orientation within the Yamanka storage facility, and prevented from tipping over, by the horizontal slab 9, the intermediate horizontal slab 10, and the vibration limiting members 16. See Yamanka, FIGS. 1 and 2. In comparison, the system of the present invention utilizes an overpack-style body (and the ground itself) to contain radiation emitted from the storage canister.

Claim 1 has been amended to recite that the overpack body forms a "cavity having a cross-section that accommodates no more than one spent fuel canister." This amendment is made to positively recite the structural limitation in claim 1 that was intended by the earlier addition of the term "overpack." As a result of this limitation, the cavity formed by the overpack body can only accommodate a single canister, or single stack of canisters.

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Yamanka does not disclose a system for storing radioactive waste having an overpack body that forms a "cavity having a cross-section that accommodates no more than one spent fuel canister." To the contrary, Yamanka discloses a warehouse facility wherein the warehouse body 38 forms a large room capable of storing a plurality of canisters 6 in a side-by-side arrangement. See Yamanka, FIG. 1 and 2. It is respectfully requested that the rejection of claim 1 over Yamanka be withdrawn.

Rejection of Claim 1 Based on Parker

Parker is cited as disclosing an underground nuclear power plant having: a) a body having a cavity with a major portion positioned below grade and; b) a ventilation duct (consisting of elements 40, 41, 42) extending from an above grade outlet to a below grade outlet.

The rejection of claim 1 over Parker is unclear. It is unknown which wall of Parker is cited as reading on the term "body" of claim 1 and what space/room reads on the "cavity." Clarification is requested. Nonetheless, Parker is an underground nuclear power plant. It is not a storage facility for radioactive waste. The Office Action notes, that "a pressure vessel that is inherently in reactor system 14 becomes a canister for storing spent fuel at the end of the life of Parker's reactor. However, the walls 36 of the reactor room do not form a "cavity having a cross-section that accommodates no more than one spent fuel canister," as is required by claim 1. See Parker, FIG. 2. It is respectfully requested that the rejection of claim 1 as being anticipated by Parker be withdrawn.

Rejection of Claim 1 Based on Breckenridge

Breckenridge is cited as disclosing an underground shelter having: a) a body having a cavity with a major portion positioned below grade and; b) a ventilation duct 17 extending from an above grade outlet to a below grade outlet.

Breckenridge, however, does not teach or suggest the invention of claim 1. As discussed above with respect to the Yamanka and Parker, claim 1 is amended to recite an overpack body that forms "a cavity having a cross-section that accommodates no more than one spent fuel canister." To the contrary, Breckenridge discloses an underground shelter. The cavity formed

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by the body/wall of the Breckenridge shelter is of such a size that it can accommodate a plurality of canisters in a side-by-side relationship. It is respectfully requested that the anticipation rejection of claim 1 over Breckenridge be withdrawn.

Rejection of Claim 1 Based on Makhmutov et al.

Makhmutov is directed to a mine ventilation system. The applicability of this reference to the claims is vague and the Office Action fails to adequately explain how the reference is applicable. Nonetheless, the rejections of claim 1 over Makhmutov will be discussed to the best of the Applicant's understanding.

The Office Action cites Makhmutov as disclosing an underground body with cavity 4 and two inlet ventilation ducts 6, 3. Thus, it must be the position that the structure/walls that form the cavity 4 read on the term "body" of the claim 1. Claim 1 is amended to recite an overpack body having a "cavity having a cross-section that accommodates no more than one spent fuel canister." As best understood, the cavity 4 of Makhmutov is a storage room. There is no discussion of the size of the cavity 4 of Makhmutov. Thus, Makhmutov does not disclose an overpack body forming a "cavity having a cross-section that accommodates no more than one spent fuel canister." It is respectfully requested that the rejection of claim 1 over Makhmutov be withdrawn.

Claim Rejections Based on Rogers

Rogers is cited as disclosing a "shipping cask." The Office Action further notes that the claims of the present application are directed to an apparatus, and that the shipping cask of Rogers can be positioned such that a major portion of the body is below grade.

To start, for the reasons discussed in Applicant's Response of August 15, 2005, the phrase "a major portion of the overpack body positioned below grade" is not a statement of intended use. Rather it is a positive recitation of the co-operational relationship of the structure. The limitation must be given patentable weight. However, even assuming that this term is only an "intended use" of the overpack body of claim 1, it is still necessary for the cask of Rogers to be capable of performing this intended use." See MPEP § 2111-2115 (stating that "statements of

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intended use do not serve to patentably distinguish the claimed structure over that of a reference, as long as the structure of the cited reference is capable of performing the intended use" (emphasis added)). However, if the shipping cask of Rogers is positioned to that a major portion of its body below grade, its lower cooling vents 92 would become blocked, thus preventing it from properly ventilating the heat load during storage. The shipping cask of Rogers is not capable of performing the intended use of the system of claim 1, which is to provide underground ventilated storage of radioactive waste.

Furthermore, even *assuming arguendo* that the shipping cask of Rogers can be positioned below grade to perform the intended function in a less efficient manner, the rejection of claim 1 as being anticipated by Rogers is still improper because it does not have an overpack body that contains at least one inlet ventilation duct extending from an above grade inlet to a below grade outlet in the cavity, as is required by claim 1. If the shipping cask of Rogers is positioned so that a major portion of its body is below grade, the bottom ventilation ducts 92 would be entirely below grade while the upper ventilation ducts 94 in the lid 30 would be entirely above grade. In such an arrangement, the Rogers cask does not have a body containing at least one inlet ventilation duct extending from an above grade inlet to a below grade outlet in the cavity. It is respectfully requested that the rejection of claim 1 over Rogers be withdrawn.

*Claim Rejections Based on Kok, et al*

Kok is cited as disclosing a "storage cask." In addition to the argument set forth in the Applicant's Response of August 15, 2005, claim 1 is amended to clarify that the overpack body contain at least one inlet ventilation duct extending from an above grade inlet to a below grade outlet, the below grade outlet being in spatial cooperation with the cavity." In Kok, the cavity 2 is formed between the outer cylinder body 5 and a centrally located chimney 6. *See Kok*, Fig. 1. The ventilation ducts (consisting of passageways 7, 8) of the Kok storage cask are located within the chimney 6 and are not in spatial cooperation with the cavity 2. *See Kok*, FIG. 2 and corresponding discussion. Thus, even if positioned below grade, the storage cask of Kok does not contain a ventilation duct extending from an above grade inlet to a below grade outlet that is

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in spatial cooperation with the cavity, as is required by claim 1. It is respectfully requested that the rejection of claim 1 over Kok be withdrawn.

*Claim Rejections Based on Chaudon et al.*

Chaudon is cited as disclosing an apparatus for dry storage of radioactive waste materials. The underground storage facility of FIG. 5 of Chaudon is another warehouse-style storage facility. The structure/body that contains the inlet ventilation duct 30 is a building specifically designed to form a large room capable of storing a plurality of tubes/canisters 10 in a side-by-side arrangement. *See Chaudon*, FIG. 5. In comparison, claim 1 requires an overpack body that forms "a cavity having a cross-section that accommodates no more than one spent fuel canister."

It should be noted that Chaudon does disclose an overpack style storage container in FIG. 1 that forms "a cavity having a cross-section that accommodates no more than one spent fuel canister." *See Chaudon*, FIG. 1. However, the overpack style storage container of FIG. 1 of Chaudon does not anticipate claim 1. First, for the reasons discussed above, the term "positioned below grade" should be given patentable weight. Second, even assuming that this term is only an "intended use" of the claimed system of claim 1, the cask in FIG. 1 of Chaudon is not capable of being used to perform the intended use of claim 1, which is underground ventilated storage, because positioning the cask of FIG. 1 of Chaudon below grade would block its lower cooling vents 14. As stated above, statements of intended do not serve to patently distinguish the claimed structure over that of a reference only so long as the structure of the cited reference is capable of performing the intended use." *See MPEP § 2111-2115* (emphasis added).

Furthermore, even *assuming arguendo* that the cask of FIG. 1 of Chaudon can perform the intended function of the system of claim 1 in an inefficient manner, the rejection of claim 1 as being anticipated by Chaudon is still improper. If the cask of FIG. 1 of Chaudon is positioned so that a major portion of its body is below grade, the bottom ventilation ducts 14 would be entirely below grade while the upper ventilation ducts 16 would be entirely above grade. Thus, the Chaudon cask of FIG. 1 would not have a body containing at least one inlet ventilation duct extending from an above grade inlet to a below grade outlet, as is required by claim 1.

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Therefore, Chaudon fails to teach or suggest the invention of claim 1 and it is respectfully requested that the rejection of claim 1 over Chaudon be withdrawn.

*Amendments to the Claims*

Claim 1 has been amended to recite that "the cavity has a cross-section that accommodates no more than one spent fuel canister." No new matter is added. Support for this amendment can be found in FIGS. 2 and 3 which show that the cross-section of the cavity is sized to accommodate only a single canister. It is a well-established principle of patent law that support can be found in the drawings.

Claim 1 also amended to clarify that "the below grade outlet is in spatial cooperation with the cavity." No new matter is added. Support can be found in FIG. 2 and in ¶¶ [0033] and [0046].

It is believed that all grounds of rejection and objection have been traversed or obviated, and that the rejections and objection should be withdrawn, and the application allowed

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